

Gene-flaw, virus could be killing Pacific salmon

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This photo illustration obtained Thursday shows a Fraser River sockeye salmon that has successfully migrated to the Adams spawning grounds. Massive die-offs among Canada's wild sockeye salmon could be due to a genetic flaw that causes immune weakness and could make viruses lethal, researchers said Thursday.

Massive die-offs among Canada's wild sockeye salmon could be due to a genetic flaw that causes immune weakness and could make viruses lethal, researchers said Thursday.

Between 40 and 95 percent of the adult sockeye population has died in recent years, delivering a serious blow to the one billion dollar [fishing industry](#) in British Columbia and causing concern that some stocks may go extinct.

So researchers examined the genomic profiles of salmon that survived the trip and compared them to [fish](#) that died before managing to reach their spawning ground and mate, said the findings published in the journal *Science*.

They found that the dead fish shared "a key genetic signature that indicates they are suffering from metabolic and immune-related stress," said the study.

Although scientists were unable to identify the exact cause of the stress, they could tell that the [genetic signature](#) appeared in fish before they entered the river for their spawning journey.

"Our hypothesis is that the genomic signal associated with elevated mortality is in response to a virus infecting fish before river entry and that persists to the spawning areas," said the study led by scientist Kristina Miller.

No single cause of death fit the wider population of [salmon](#) that died in the river.

However, [statistical analysis](#) showed "a consistent group of genes whose expression was dialed either up or down in a high proportion of fish that didn't survive," said the study.

"Many of these genes are involved biological pathways known to be associated with viral activity."

[Fish stocks](#) were said to rise in 2010 after years of intense scarcity that closed or restricted many fishing areas, mostly in Canada where the 2009 near-demise of sockeye in the Fraser River prompted Canada to appoint a commission to investigate.

It began holding public meetings in August just as the massive 2010 return began.

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